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(54) Title: BAG-IN-CONTAINER WITH PREPRESSURIZED SPACE BETWEEN INNER BAG AND OUTER CONTAINER

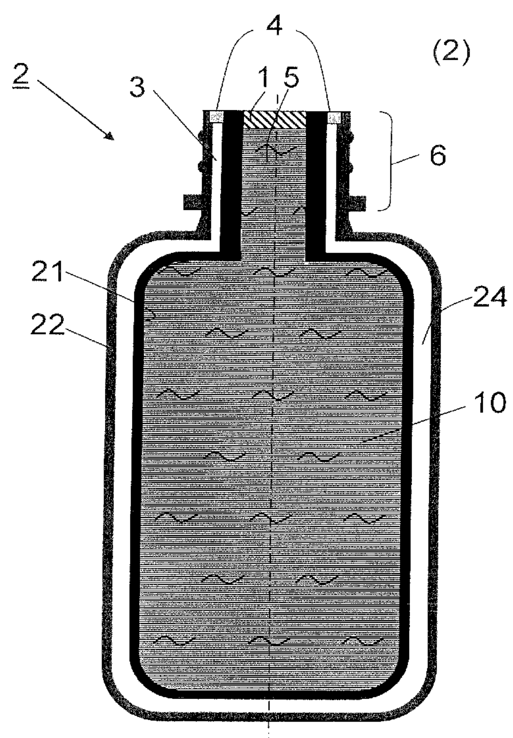

FIGURE 1

(57) Abstract: Bag-in-container (2) comprising an inner layer (21) forming a bag filled with a fluid (10), said bag being separatable from an outer layer (22) forming the container, and further comprising a mouth (5) fluidly connecting the volume defined by the bag to the atmosphere and separated therefrom by sealing means (1), said container further comprising at least one space vent (3) fluidly connecting the space (24) between inner and outer layers (21) and (22) to the atmosphere, wherein said vent comprises closing means able to control the gas flow between the space (24) and the atmosphere and in that the space (24) contains an amount of gas ($V_{s,i}$) at a pressure (P_i) insufficient to compress the bag to drive out more than 80% of the fluid contained therein. The present invention also concerns a kit of parts comprising a bag-in-container as defined above and a dispensing appliance.

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BAG-IN-CONTAINER WITH PREPRESSURIZED SPACE BETWEEN INNER BAG AND OUTER CONTAINER

Field of the Invention

The present invention relates in general to new developments in dispensing bag-in-containers and, in particular, to bag-in-containers wherein dispensing of the fluid contained therein is driven by the application of a fluid compressive pressure to the inner bag.

Background of the Invention

Bag-in-containers, also referred to as bag-in-bottles or bag-in-boxes depending on the geometry of the outer vessel, all terms considered herein as being comprised within the meaning of the term bag-in-container, are a family of liquid dispensing packaging consisting of an outer container comprising an opening to the atmosphere —the mouth— and which contains a collapsible inner bag joined to said container. The fluid to be dispensed, for example a beverage, is contained in said bag and dispensing of said fluid can be driven by any of the following techniques.

(a) by injecting a gas into the space between the inner bag and outer container when dispensing (cf. US-A-3484011, US-A--3450254, US-A-4,330,066, and US-A-4892230; US-A-5301838, US-A--5407629, JP-A-5213373, JP-A-8001761; EP-A-1356915; US-A-6649121; JP-A-10180853);

(b) by storing a pressurized gas in the space between the inner bag and outer container, said space being thereafter sealed (cf. GB-A-2184491; EP-A-741088;GB-A-1414329; US-A-4039103; WO2006087462; WO2007085051; WO2007128157; EP-A-105537; EP-A-776834; FR-A-2446128);

(c) by creating a depression in the inner bag, thus sucking the fluid out of the bag (cf. EP-A-596142; EP-A-391817; WO9211187; WO9312013) ;

(d) by applying an external mechanical pressure on the bag by means of an elastic sleeve (cf. WO8200780; WO9314987) or a moving member (cf. WO2006068586; WO2007105934);

(e) by injecting pressurized gas in the inner bag in contact with the fluid to be dispensed and using a dispensing duct dipped into the fluid; this solution differs from the preceding ones in that the collapsible bag is not used as dispensing driving means, but merely as a disposable hygienic storage means.

Techniques (a) and (b) defined supra have in common that an external, compressive fluid pressure is applied to the inner bag, said fluid being confined in the space between the inner bag and outer container. These solutions are advantageous because the pressurizing gas is never in contact with the fluid to be dispensed and they do not require a vacuum pump to depressurize the inner bag to suck out the liquid contained therein.

In technique (a) consisting of injecting a gas into the space between the inner bag and outer container when dispensing, there is no over-pressure in the space until dispensing of the beverage contained in the bag is activated by injecting pressurized gas into the space and, theoretically, the over-pressure could/should drop to near zero when said dispensing operation is interrupted. This technique has the great advantages that:

- the outer container needs not be high pressure resistant, and it generally suffices that it be substantially stiffer than the bag (which is very compliant) to be operational, and

• the initial (i.e., before use of the container) volume (V_i) of the space between the inner bag and outer container can be very small, even nil in case the inner bag is co-blowmoulded together with the outer container in a single blowing operation.

The drawbacks of this technique, however, are that:

• injecting pressurized gas into said space either requires bulky and noisy equipment like a pump or compressor, is expensive if compressed gas-cartridges are used (e.g., liquefied CO_2 cartridges) or is rather complex if regulating valves are used between inner and outer containers;

• in case of oxygen sensitive fluids contained in the inner bag, the sole protection against the oxidation thereof is the walls of the inner and outer containers, which for financial reasons, are designed as thin as possible; and

• in case of integrally blowmoulded bag-in-containers, the walls of the inner and outer containers adhering to one another, though poorly, may generate problems during delamination upon injection of pressurized gas through the interface.

On the other hand, technique (b) of storing a pressurized gas in the space between the inner bag and outer container, said space being thereafter sealed, solves most drawbacks of the former technique, but yields other drawbacks, in particular that:

• the outer container must be resistant to high pressures;

• for a given bag capacity, the container is necessarily larger as some initial volume (V_i) of the space between the inner bag and outer container must be provided to accommodate the pressurized (propellant) gas;

- the pressure in the space rapidly decreases as the bag collapses.

Most developments comprising a pressurized gas stored in the space include "pressure resistant shells" (as quoted from WO9212912) which can resist high pressures. Such pressure resistant shells cannot be manufactured by integrally blowmoulding two layer preforms. Some have proposed original solutions wherein CO_2 is generated in situ by fermentation (EP0314554) or by desorbing gas adsorbed on a zeolite or activated carbon (EP0569590), but the applications of these solutions remain limited.

The present invention proposes an original solution that solves the problems of both techniques (a) and (b) whilst cumulating their respective advantages.

Summary of the Invention

The present invention is defined in the appended independent claims. Preferred embodiments are defined in the dependent claims. In particular the present invention relates to bag-in-containers comprising an inner layer forming a bag filled with a fluid, said bag being separatable from an outer layer forming the container, and further comprising a mouth fluidly connecting the volume defined by the bag to the atmosphere and separated therefrom by sealing means, said container further comprising at least one space vent fluidly connecting the space between inner and outer layers to the atmosphere. Bag-in-containers comprising such vents are suitable for dispensing techniques comprising injection of a pressurized gas through said vents to drive the liquid out of the bag. They can also be used in techniques where the liquid is sucked out of the bag in order to balance the pressure in the space with the atmosphere as the

bag volume decreases, but said vents are simple holes and comprise no closing means and cannot be connected to a source of pressurized gas. In the present invention, only vents connectable to a source of pressurized gas are contemplated and must furthermore comprise closing means able to control the gas flow between the space and the atmosphere. The space between the inner bag and outer container of the bag-in-container of the present invention contains an amount of gas ($V_{S,i}$) at a pressure (P_i) insufficient to compress the bag to drive out more than 80% of the fluid contained therein.

The present invention also concerns a kit of parts comprising a bag-in-container as described above and an appliance to accommodate the bag-in-container and comprising a dispensing duct with means for connecting it to the mouth of the bag-in-container and an external source of pressurized gas with means for connecting it to a vent and for cooperating with the closing means, when additional pressure is required to drive the fluid out of the inner bag.

In a preferred embodiment, the closing means open when the pressure in the space falls below a given value. Alternatively or concomitantly, the closing means open when the external pressure is higher by a given value than the pressure in the space. In a simpler embodiment, the closing means may be opened by puncturing it upon connecting the vent to an external source of pressurized gas.

Preferably, the gas stored in the space between the inner bag and outer container is at an initial pressure (P_i) (i.e., when the inner bag is fully filled and none of the fluid it contains has been dispensed) comprised between 0,1 and 6,0 bar, preferably between 0,1 and 4,0 bar, most preferably between 0,5 and 3,0 bar. The normalized space volume

($V_{S,i}$ / V_C), wherein $V_{S,i}$ is the initial volume of said space (or of the gas at a pressure P_i) and V_C is the container's volume, should be as low as possible in order to minimize the size of the outer container and should be less than 10%, preferably less than 5%, most preferably less than 0,1%. The initial volume ($V_{S,i}$) of the space can be close to zero, in particular if the bag-in-container is produced by integrally blowmoulding two polymeric preforms together, resulting in a container consisting of two separatable layers joined by a weak interface. The interface between inner and outer layers of integrally blowmoulded bag-in-containers is usually disrupted by the end-user by injecting gas therebetween through the vent upon dispensing the fluid contained in the inner bag. The layer separation, however, is not always as reproducible as could be expected, which could lead to uncontrolled bag collapse and to the formation of pockets full of fluid sealed from the mouth of the bag, and thus to the incomplete dispensing of the fluid. By adding a given amount of gas in the space between the bag and container before the end-user begins to dispense the content of the inner bag, the interface between the two layers is disrupted in a controlled way, ensuring that the bag-in-container will function smoothly and thoroughly when in use, allowing full dispensing of the fluid contained therein. Any leak in the bag may be identified immediately as the inner bag is being filled with fluid and the space is pre-pressurized with gas. Consequently, any bag-ín-container with defects at the interface or in the bag can immediately be spotted and rejected upon introducing said amount of pressurizing gas through the interface.

Bag-in-containers according to the present invention may be used in a variety of applications, including dispensing of therapeutic fluids, chemicals, etc. A preferred application, however, is for dispensing beverages, carbonated or not, in particular soft drinks and beers. In many

applications, the fluid may be sensitive to oxidization. By pre-pressurizing the space between inner bag and outer container with a gas such as CO_2 or N_2, an additional benefit is obtained of prolonging the shelf life of the fluid, as said gas forms a blanket or barrier to oxygen diffusion across the walls of the outer container and the inner bag.

Brief Description of the Drawings

Figure 1 is a cross sectional view of a bag-in-container according to the present invention.

Figure 2 is a graphical representation of the pressure drop upon use in the space between inner bag and outer container of a pre-pressurized bag-in-container.

Figure 3 is a graphical representation of a bag-in-container according to the present invention mounted on a dispensing appliance and ready for use.

Detailed Description of the Invention

The bag-in-container

Referring now to appended Figure 1, there is illustrated a bag-in-container (2) comprising an inner bag (21) filled with a fluid (10) and an outer container (22) joined at least at the level of the neck region (6) by an interface (not shown in the Figure). The space (24) of volume ($V_{S,i}$) between the inner bag and outer container (21) and (22) is in fluid communication with at least one vent (3) and is filled with a certain amount of pre-pressurizing gas at a pressure (P_i) stored in the initial space volume ($V_{S,i}$) which will be defined below. Said vent is separated from the atmosphere by closing means (4) suitable for controlling the gas flow across the vent (3). A closing means is herein considered as

controlling the flow across vent (3) if it can alternate at least once from a closed position preventing any gas flow, to an open position allowing gas flow across vent (3). A simple stopper or cap usually found in pressurized bag-in-containers is not considered as controlling the flow since its sole function is to seal the pressurized space from the atmosphere. Similarly, a hole in a bag-in-container used to compensate the pressure in the space with the atmosphere as the inner bag collapses by suction of the fluid contained therein, cannot be considered as controlling the flow since it is meant to remain open.

Closing means (4) may be a valve which can be operated either manually, or automatically as a function of the pressure inside the space (24). Alternatively, the closing means (4) may be punctured open upon mounting the bag-in-container in its corresponding dispensing appliance. In this embodiment, closing means (4) may be a simple cap made of an elastomeric material like rubber. The elastomeric cap or stopper may comprise a thinner section to either facilitate puncturing thereof, or to break open when the pressure difference between the space (24) and the gas source (103) reaches a preset value. Preferably, the vents (3) and corresponding closing means (4) are located adjacent to, and oriented coaxially with mouth (5), in order to simplify the mounting of the bag-in-container onto the dispensing appliance (cf. Figure 3).

The bag-in-containers according to the present invention may be manufactured by any method known in the art. A particularly preferred manufacturing technique, however, is to integrally blowmould a two layered perform or two interlocked prefroms in a single process step, resulting in a two layer container, wherein the inner and outer layers are separated by an interface, yielding a space volume substantially nil ($V_S = 0$) before the injection of pre-pressurizing gas (cf. US 11/785748-

Inbev). The injection of pre-pressurizing gas at a pressure (P_i) through the vent (3) initiates the separation of the interface between the inner bag and the outer container ensuring a smoother and more controlled collapse of the inner bag upon use and therefore yielding a more reliable product. Integrally blowmoulded bag-in-containers were produced yielding a delamination pressure of about 0.5 ± 0.1 bar overpressure and showing little trace of cohesive fracture between the inner and outer layers, showing that injection of pre-pressurizing gas at a pressure (P_i) greater than 0.5 bar through the interface of integrally blowmoulded bag-in-containers could effectively serve to initiate the separation of the interface.

The interface may be further weakened by applying a release agent on either or both surfaces of the inner and outer preforms, which are to form the interface of the bag-in-container. Any release agents available on the market and best adapted to the material used for the preform and resisting the blowing temperatures, like silicon- or PTFE-based release agents (e.g., Freekote) may be used. The release agent may be applied just prior to loading the preforms into the blowmoulding unit, or the preforms may be supplied pretreated.

Alternatively, or additionally to the application of a release agent, the interface may be weakened upon blowmoulding the bag-in-container, also when preforms with no air gap between inner and outer preforms are used, by blowing a fraction of the pressurized fluid used between the two preforms to prevent intimate contact between the inner and outer layers and thus preventing the formation of a strong interface between the two layers. The fraction of pressurized fluid injected between the two preforms must be carefully metered such that sufficient fluid is injected to form a thin fluid cushion between the two layers, but any excess leading

to a poor blowing of the inner bag should be avoided. The proper ratio can easily be assessed with a series of tuning tests.

Preferred materials for the bag-in-container of the present invention are polyesters like PET, PEN, PTT, PTN; polyamides like PA6, PA66, PA11, PA12; polyolefins like PE, PP; EVOH; biodegradable polymers like polyglycol acetate (PGAc), polylactic acid (PLA); and copolymers and blends thereof. In case different materials are used for the inner and outer layers, their optimal blow-moulding temperatures should not differ from one another by more than about 70°C, preferably 40°C, most preferably 10°C, and ideally should have the same blow-moulding temperature. The layer's temperatures may be determined by IR-measurement.

For integrally blowmoulded bag-in-containers, the at least one vent (3) preferably is in the shape of a wedge with the broad side at the level of the opening thereof, where the closing means (4) is located, and getting thinner as it penetrates deeper into the vessel, until the two layers meet to form an interface (24) at least at the level of the neck region. The container may comprise one or several vents evenly distributed around the lip of the bag-in-container's mouth. Several vents are advantageous as they permit the interface of the inner and outer layers (21) and (22) of the bag-in-container (2) to release more evenly upon blowing pressurized gas through said vents. Preferably, the preform comprises two vents opening at the vessel's mouth lip at diametrically opposed positions. More preferably, three, and most preferably, at least four vents open at regular intervals of the mouth lip.

Initial gas pressure and space volume

A fluid compressive force may be applied to the inner bag of a bag-in-container to literally "squeeze" the fluid out of the bag , either:

(a) by injecting a pressurized gas into the space between the inner bag and outer container when dispensing; in this technique the initial pressure (P_i) in the space (24) is substantially nil and so can be the initial volume ($V_{S,i}$) thereof; the source of pressurized gas may be a pump or compressor, or in particular for home appliances, a gas-cartridges may be used (e.g., liquefied CO_2 cartridges); or

(b) by storing a pressurized gas in the space between the inner bag and outer container, said space being thereafter sealed: in this technique the initial pressure (P_i) and volume ($V_{S,i}$) must be sufficient to drive out of the bag substantially all the fluid contained therein.

As explained in the section entitled "background of the invention", cartridges of pressurized (or liquefied) gas are rather expensive and prolonging their service life would certainly be to the benefit of the end-user. Similarly, down-sizing the pump or compressor required to drive the dispensing of the fluid, is advantageous in terms of cost, noise, and bulkiness of the appliance.

Technique (b) solves all these problems, since neither a cartridge nor a compressor are required for its functioning. On the other hand, the initial pressure (P_i) of the pressurizing gas contained in the space (24) must be high to ensure that sufficient driving force is available to squeeze out substantially all the fluid contained in the bag. It is considered that there is no more driving force available to squeeze the fluid out of the bag, when the pressure (P) in the bag is equal to or lower than the pressure (P_0) required to deform the bag and to lift the fluid to be dispensed up to the highest point of the dispensing duct.

It is clear that the pressure (P) in the space (24) of pressurized bag-in-containers decreases as the volume of the bag ($V_B = V_C - V_S$) decreases as it collapses. For perfect gases, $P = (P_i \times V_{S,i}) / V_S$, wherein the subscript i refers to the pressure and volume of the space (24) before use, and B, C, S refer to bag (21), container (22), and space (24), respectively. Dividing both terms of this expression by the container volume (V_C), and rearranging yields the expression:

$$P = (P_i \times (V_{S,i} / V_C)) / (V_S / V_C) \qquad (1)$$

which is represented graphically in Figure 2 as the pressure (P) as a function of the relative space volume (V_S / V_C). The initial volume of the space before any beverage was dispensed is characterized by $V_{S,i} / V_C$; and the the minimal pressure required to compress the bag and drive the fluid out of the bag is represented by P_0, with corresponding volume of the space, $V_{S,0} / V_C$. The volume of fluid which cannot be dispensed for insufficient pressure in the space (24) is simply $1 - V_{S,0} / V_C$. In the example represented in Figure 2, the initial pressure (P_i) and volume ($V_{S,i}$) of pre-pressurizing gas stored in the space (24) is sufficient to dispense 40% only of the fluid initially contained in the inner bag, thus leaving $(1 - V_{S,0} / V_C) = 60\%$ of the liquid in the bag, according to the present invention. This result would be unacceptable for any pressurized bag-in-container using technique (b) as defined above wherein the pressurized gas is sealed in space (24). The manufacturer faced with such situation should either increase the initial volume ($V_{S,i}$) of space (24), thus increasing the size of the container or increase the initial pressure (P_i) of the gas stored in the space (24) thus requiring a substantially more resistant outer container to resist deformation from such pressurization.

The present invention takes profit of the advantages of each of techniques (a) and (b) as defined above, whilst it skips their respective disadvantages. Indeed, the space (24) of bag-in-containers of the present invention is pre-pressurized with a gas stored therein in a volume ($V_{S,i}$) and at a pressure (P_i), which is insufficient to drive out of the inner bag all the fluid contained therein. According to the present invention, the initial volume ($V_{S,i}$) and pressure (P_i) of the pre-pressurizing gas stored in space (24) are such that not more than 80% of the fluid initially contained in the inner bag can be driven out of the bag by compression thereof (i.e., $\square V_S / V_C = ((V_{S,i} - V_{S,0}) / V_C) \leq 0,8$), preferably between 10% and 70% and most preferably, between 25 and 50%. The missing pressure to drive out of the bag the remaining content of the inner bag ($1 - V_{S,0} / V_C$) is supplied by an external source (103) of pressurized gas connected to the vents (3) and in coordination with the closing means (4) which control the gas flow through the vents. The external source (103) of pressurized gas may be a pump or compressor, or a pressurized gas cartridge (e.g., liquefied CO_2 cartridge).

The advantages of this solution are unexpectedly great. In case the initial gas content characterized by ($V_{S,i}$ and P_i), is sufficient to drive, say, 50% of the initial fluid content of the inner bag, and the remaining fluid is driven out of the bag by an external source of pressurized gas, like a cartridge, the service life of the cartridge is multiplied by two with respect to the same system without pre-pressurization of the space (24), with corresponding savings for the end-users. Compared with a fully pressurized bag-in-container, the mechanical resistance of the outer container is proportional to the cubic of the initial pressure (P_i) yielding considerably cheaper containers, with corresponding savings for the end-users.

Ideally the initial volume ($V_{S,i}$) in which the pre-pressurizing gas is stored should be kept as small as possible in order to reduce the overall size of the container for a given capacity of the inner bag. Preferably it should be restricted to less than 10%, preferably, less than 5%, most preferably, less than 1% of the total container volume (V_C). The ideal initial pressure (P_i) depends on a number of parameters, like the initial relative space volume ($V_{S,i}$ / V_C), the minimal driving pressure (P_0) of the system, and the mechanical resistance of the outer container. Generally speaking, the initial pressure (P_i) is comprised between 0,1 and 6,0 bar above atmospheric, preferably between 0,5 and 4,0 bar, most preferably between 1,0 and 3,0 bar.

To produce a bag-in-container according to the present invention, an empty bag-in-container must first be produced in any way known in the art (e.g., producing separately a container and a bag, and inserting the latter into the container or, most preferably, by co-blowmoulding the inner bag and outer container in a single blowmoulding operation as discussed above). The fluid (10) to be dispensed and the pre-pressurizing gas must then be introduced into the inner bag (21) and the space (24), which are the respectively sealed. These two operations may be carried out in any order: either,

- the bag (21) is filled first with fluid (10) and thereafter the space (24) is pressurized by injecting a gas through the vents (3) until the desired initial pressure (P_i) and volume (V_i) are reached; each of the mouth (5) and vent (3) being sealed or closed at the appropriate time with sealing means (1) and closing means (4), respectively, or
- the space is filled with a given amount of gas first, followed by filling the inner bag (21) with the fluid to be dispensed, thus compressing the gas in space (24) until it reaches the desired initial

pressure (P_i) and volume (V_i), or

- both the inner bag (21) and the space (24) are filled together with the fluid to be dispensed and the pre-pressurizing gas, respectively.

Dispensing appliance

To dispense the fluid (10) contained in the inner bag (21), the bag-in-container of the present invention is to be mounted onto a dispensing appliance (100) as illustrated in Figure 3. In its mounted position, a dispensing duct (105) opening to the atmosphere at (107), is brought in fluid communication with the interior of the inner bag (21) through the mouth (5) of the bag-in-container, while a source of pressurized gas (103) is brought in fluid communication with the space (24) through vents (3) in cooperation with closing means (4) (in Figure 3, only one connection to vent (3) is shown for sake of clarity). Both connections are held tight with fastening means (109) which could advantageously be a nut. Pressurized gas source (103) may be a cartridge of pressurized or liquefied gas, such as CO_2 or N_2, as represented in Figure 3, or it may be a pump or compressor (not shown). The dispensing duct (105) may be provided with a sharp end able to rip open sealing means (1) separating the interior of the inner bag (21) from the atmosphere as the mouth (5) is brought into contact with said end of the dispensing duct (105) to create a fluid connection therebetween.

Similarly, the closing means (4) may be punctured open by a sharpened end of the duct (101) to create a fluid communication between the space (24) and the gas source (103). Alternatively, closing means (4) may be a valve connectable to the end of dict (101). Control valves (113, 115) may be provided on both the dispensing duct (105) and gas duct

(101), respectively, to control, either manually or automatically, the flow of fluid and gas, respectively, when required.

Upon use, the initial pressure (P_i) of the pre-pressurizing gas stored in space (24) is sufficient to dispense a given amount of the fluid (10) contained in the inner bag (21) (not more than 80% of the initial fluid content (= □V_S / V_C)). As the pressure (P) in the space (24) decreases as shown in Figure 2, additional pressurized gas is injected from gas source (103) into space (24) through duct (101) and vent (3). The control of gas flow from the gas source to the space (24) may be provided by the closing means (4) themselves or, alternatively, by control means such as a pressure valve (115) disposed between the gas source (103) and the closing means (4), which must then be opened, e.g., by puncturing it. In the former case, closing means (4) may be adapted to open when the pressure in the space (24) falls below a given value, such as $P / P_0 < 1.2$. Alternatively, it may be adapted to open when the external pressure is higher by a given value than the pressure in the space (24). The same rules may be applied to control valve (115) in case closing means (4) is puncture opened.

Claims

1. Bag-in-container (2) comprising an inner layer (21) forming a bag filled with a fluid (10), said bag being separatable from an outer layer (22) forming the container, and further comprising a mouth (5) fluidly connecting the volume defined by the bag to the atmosphere and separated therefrom by sealing means (1), said container further comprising at least one space vent (3) fluidly connecting the space (24) between inner and outer layers (21) and (22) to the atmosphere, characterized in that, said vent comprises closing means able to control the gas flow between the space (24) and the atmosphere and in that the space (24) contains an amount of gas ($V_{S,i}$) at a pressure (P_i) insufficient to compress the bag to drive out more than 80% of the fluid contained therein.

2. Bag-in-container according to claim 1, wherein the closing means open when the pressure in the space (24) falls below a given value and/or when the external pressure is higher by a given value than the pressure in the space (24).

3. Bag-in-container according to claim 1 or 2, wherein the closing means can be punctured.

4. Bag-in-container according to any of the preceding claims, wherein the pressure (P_i) of the gas confined in space (24) is comprised between 0.1 and 6 bar above atmospheric.

5. Bag-in-container according to any of the preceding claims, wherein the initial volume ($V_{S,i}$) of the space (24) is less than 10%, preferably, less than 5%, most preferably, less than 1% of the total container volume (V_C).

6. Bag-in-container according to any of the preceding claims, which is obtainable by integrally blowmoulding two polymeric performs together.

7. Bag-in-container according to any of the preceding claims, wherein the fluid contained in the bag is a beverage, preferably a carbonated and/or fermented beverage.

8. Kit of parts comprising a bag-in-container (2) according to any of the preceding claims and an appliance fitting the bag-in-container and comprising a dispensing duct with means for connecting it to the mouth (5) of the bag-in-container (2) and an external source of pressurized gas (103) with means (101) for connecting it to a vent (3) and for cooperating with the closing means (4), when additional pressure is required to drive the fluid out of the inner bag.

9. Kit of parts according to claim 8, wherein the means (101) for connecting the vent (3) to the external source of pressurized gas and for cooperating with the closing means (4) comprises puncturing means for creating a fluid connection through vent (3) between the external source of pressurized gas and the space (24), and further comprising a valve (115) for controlling the gas flow into space (24).

10. Kit of parts according to claim 8 or 9, wherein the external source of pressurized gas is a cartridge of pressurized or liquefied gas, preferably, CO_2 or N_2.

11. Kit of parts according to any of claims 8 to 10, wherein dispensing duct (105) comprises a valve (113) for controlling the fluid flow out of the inner bag (21).

12. Kit of parts according to any of claims 8 to 11, for the dispensing of a beverage, preferably a soft drink or beer.

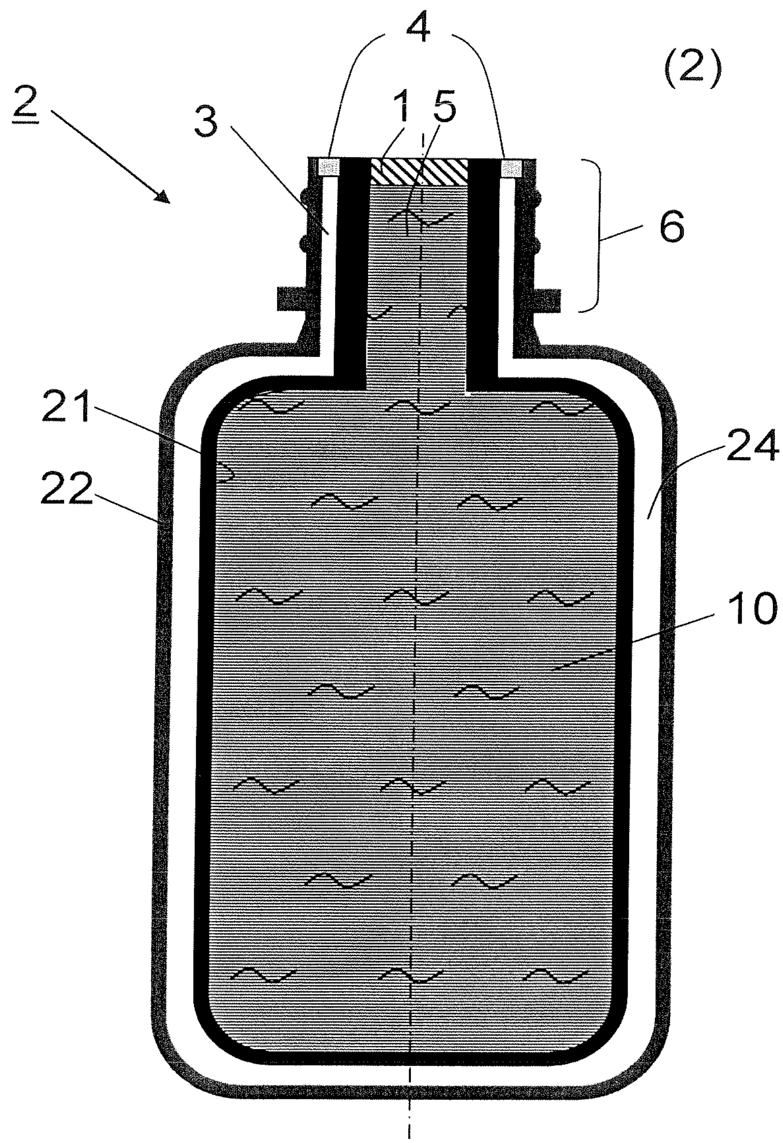

FIGURE 1

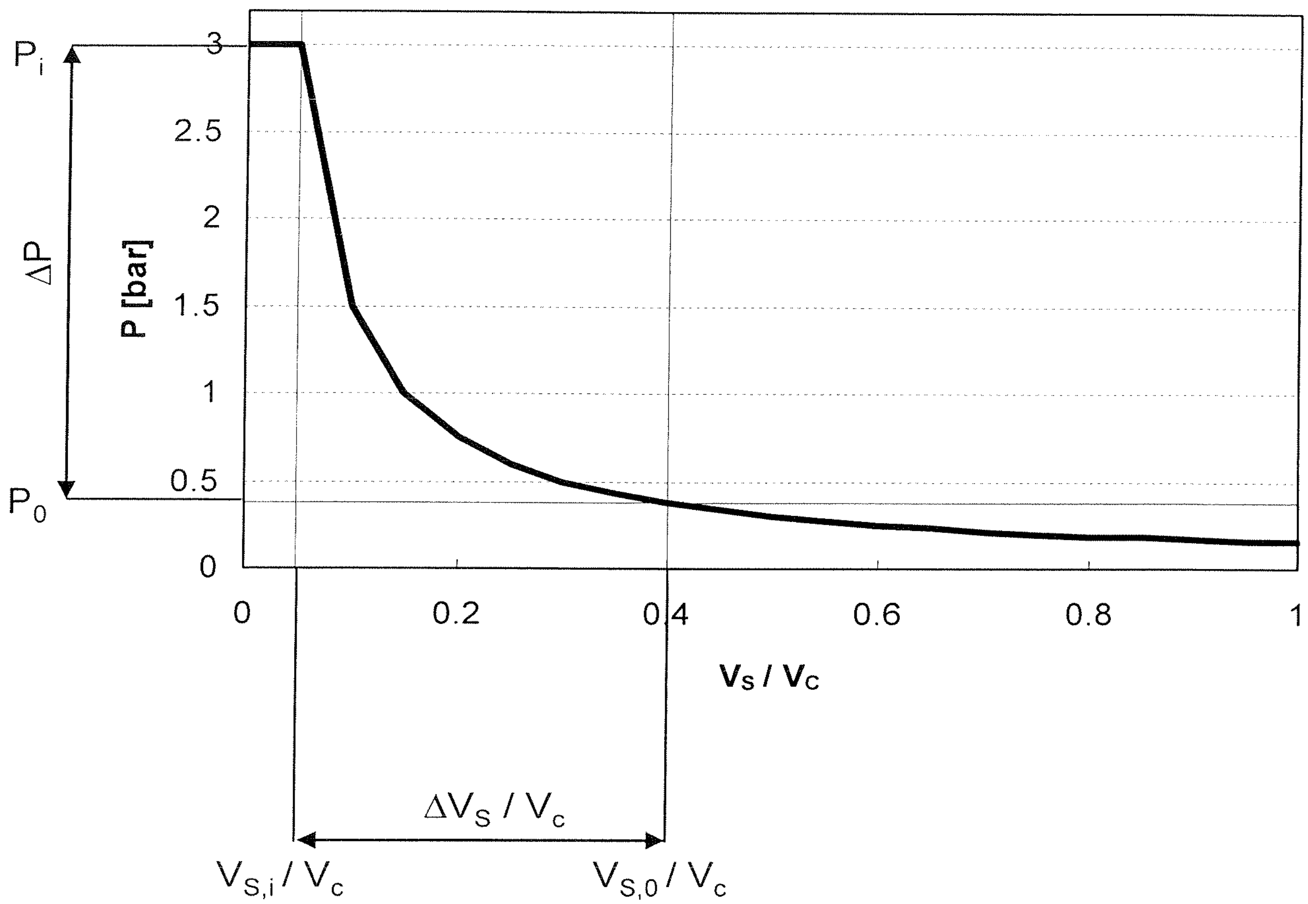

FIGURE 2

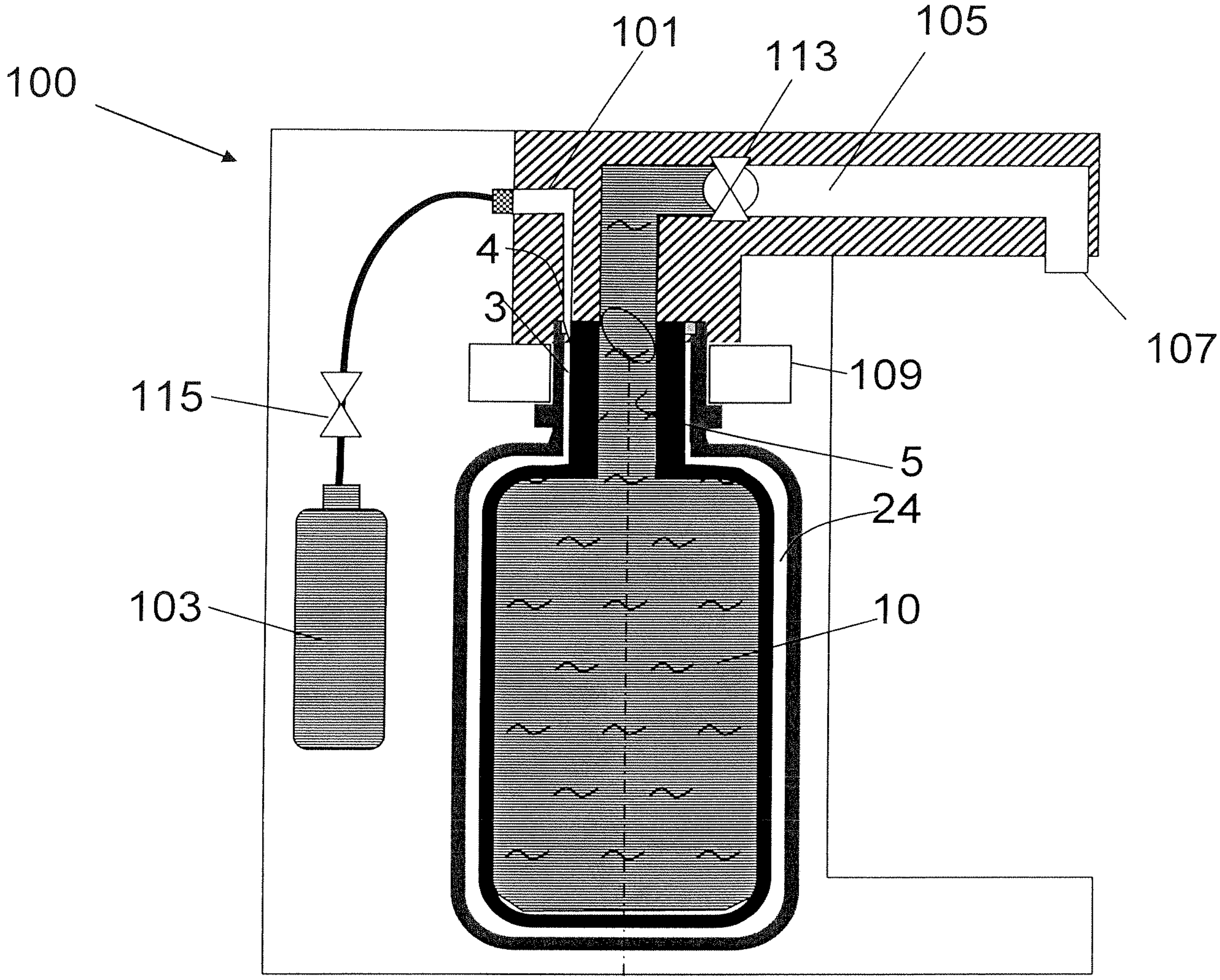

FIGURE 3